

Review Comments
Quality Assurance Project Plan
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Portland Harbor Superfund Site
Dated January 18, 2018

Review Comments dated February 9, 2018

Following are the United States Environmental Protection Agency's (EPA's) comments on the document titled Agency Review Draft *Quality Assurance Project Plan Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site* (herein referred to as the quality assurance project plan [QAPP]) prepared by AECOM Technical Services (AECOM) and Geosyntec Consultants, Inc. (Geosyntec) on behalf of Portland Harbor Pre-Remedial Design Group.

EPA understands the purpose of the QAPP is to support the pre-design work activities and sampling described in the activity-specific field sampling plans (FSPs) and the Pre-Remedial Design Investigation Studies Work Plans ([PDI Work Plans] Geosyntec 2017). The purpose of EPA's review is to assess if the QAPP supports the pre-remedial design sampling and provides quality control elements to satisfy the data quality objectives (DQOs).

EPA's comments are categorized as "Primary," which identify concerns that must be resolved to achieve the objective; "To Be Considered," which, if addressed or resolved, would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the objectives; and "Matters of Style," which substantially or adversely affect the presentation or understanding of the technical information provided in the document.

Primary Comments

1. Section 1.1 Objectives, page 1, paragraph 1: This section must be revised to describe the objectives of the QAPP.
2. Section 3.2.3 Step 3: Identify Information Inputs and Table 3, page 9, paragraph 3: Surface sediment sample locations for sediment management areas (SMAs) are described as targeted locations in the QAPP. The rationale used to identify surface sediment SMA locations (i.e., how were they targeted) must be included in the surface sediment FSP or the QAPP. Similar rationale was included in the sediment core FSP to describe how core locations were identified.
3. Section 3.2.3 Step 3: Identify Information Inputs and Table 3, page 9, paragraph 2: The basis for selecting the locations and the number of stratified random samples to develop surface area weighted average sediment concentrations (SWACs) throughout the site must be described in the DQOs.
4. Section 3.2.3 Step 3: The QAPP must describe how surface sediment data generated from target surface sediment locations and locations co-located with sediment cores will be used with the data generated from random locations to develop the SWACs.
5. Section 4.2.1.2 and 4.2.1.3, pages 20 -21, paragraphs 4 and 5: The discussion of core information states that other collection information will be recorded and added to the database, and list some examples. The discussion of the surface grabs makes no mention of such information. These data are essential QA information and should be identified in detail. How the information is added to data compilation should be stated as well. At a minimum the sections should reference the appropriate FSP.
6. Section 6.3.1, page 40, paragraph 3: The last sentence in this section states: "Where summing of the analytical results is required (e.g., total polycyclic aromatic hydrocarbons [PAHs]) the process referenced in Appendix A of the Remedial Investigation /Feasibility Study (RI/FS) report should be followed (EPA 2016a)." Please note, summing rules are being updated by EPA for key constituents. The updated summing rules are attached. The summation of analyte groups must be in accordance with the December 2017 updated rules for summing. The reference for the summing rules must be updated in the QAPP.
7. Section 5.1.2.2, page 35, paragraph 6: Unless we misunderstand the term, using the appearance of samples as they are received at the laboratory is an inadequate form of field performance audit. A filled sediment container does not ensure that the sample was collected correctly. QA managers must routinely do shipboard inspections to verify all the field procedures.
8. Section 6.5.2, page 40, bullet list: One of the quality control checks for high resolution mass spectroscopy work requires the laboratories to include the ion abundance ratio summaries for each sample compared against the theoretical values provided in the applicable method. This documentation must be added as a bullet item. Run logs for all analyses must also be included.
9. Table 2a, page 7 of 8: The conversion of the 0.00040658 micrograms per kilogram ($\mu\text{g}/\text{kg}$) record of decision (ROD) cleanup level for 2,3,7,8-tetrachlorodibenzofuran (TCDF) is incorrectly converted to 4.07 picogram per gram (pg/g). The correct conversion must be used for the cleanup level of 0.40658 pg/g .

10. Table 2a, page 7 of 8: The ROD cleanup levels for the organochlorine pesticides are not listed correctly with their corresponding analytes in the table. The ROD cleanup levels for the organochlorine pesticides analysis must be checked and appropriately corrected.
11. Table 2a, page 8 of 8: The cleanup level listed in the ROD for polychlorinated biphenyls (PCBs) is 9 µg/kg. The ROD cleanup level listed in the QAPP for PCB Aroclors is 9 µg/g, which is incorrectly converted. The cleanup level must be corrected and the QAPP revised. If the units of µg/g are correct for the project quantitation limits (PQLs) and method detection limits (MDLs) listed, they will not meet the ROD cleanup level of 9 µg/kg. The information for this analysis must be corrected, and the PQLs/MDLs must meet the cleanup levels.
12. Table 2b, page 1 of 7: The same conversion error for the ROD cleanup level for 2,3,7,8-TCDF discussed in Primary Comment #7 is present in this table and must be corrected.
13. Table 2a, page 1 of 8: The American Society for Testing and Materials (ASTM) method D422 has been withdrawn and replaced with ASTM D7928. The grain size analyses must be performed by the current ASTM standard.
14. Tables 2a and 2b: The reporting limits for the sediments must be clarified as either “dry weight” or “wet weight” basis.
15. Table 2c, pages 1 through 12: The reporting units for the parameters that will be collected with high-volume sampling on XAD-2 columns are mass/sample, but the ROD cleanup levels are in units of mass/volume. The reporting level information must be in units of mass/volume to be more directly comparable to the ROD cleanup levels.

The reporting levels are easily calculated as mass per sample divided by volume of water collected with the column. For 300 liters of water, a reporting limit of 0.2 nanograms per sample (Aldrin) would result in a reporting limit 0.2 ng/300 liters (L) or 0.000667 ng/L or 0.00000667 micrograms per liter (µg/L), which can then be shown to meet the ROD cleanup level of 0.0000077 µg/L for Aldrin. All reporting level information for the high-volume parameters must be updated. A note at the bottom of the table must indicate that the reporting levels are variable with the volume of water collected and the values in the table require collection of 300 liters of water. If the volumes of water are provided to the laboratory, they can report the results on a mass/volume basis. Evaluation of the reporting levels meeting the cleanup levels must be performed for the high-volume parameters in a similar manner as the peristaltic pump analyses.
16. Table 2d, page 1 of 1: If a cleanup level is listed for a parameter and the laboratory’s reporting levels will not meet the cleanup level, it must be handled on this table the same way it is handled in the other tables. If it will not be problematic that the cleanup level will not be met, it needs to be clarified with a footnote.
17. Table 2e: ROD Table 17 lists a cleanup level for a carcinogenic polycyclic aromatic hydrocarbon benzo(a)pyrene equivalency [cPAH B(a)P eq] of 7.1 µg/kg for fish tissue. There is no information for cPAH analysis in Table 2e. Fish tissue must be analyzed for cPAHs, and the information for the analysis must be included in Table 2e.
18. Table 3, Surface Sediment Sampling, Step 3: Table 3 lists that 178 samples will be collected for SMAs, but the PDI Work Plan listed 212 targeted SMA samples will be collected. The difference between the sample numbers in the QAPP and PDI Work Plan must be resolved.
19. Table 3, Surface Sediment Sampling and Subsurface Sediment Coring, Step 5: Step 5 of the DQO process must describe how surface and subsurface sediment results will be used to refine the SMAs footprint.
20. Table 3, Surface Sediment Sampling: The DQOs describe that surface sediment results will be used to evaluate changes to sediment concentrations over time. The DQOs must describe how the results will be used to evaluate changes to sediment concentrations over time.
21. Table 3, Sediment Trap Study: The DQO for sediment traps should not list contaminant loading under Step 5. Sediment trap data can be useful for characterizing suspended sediment entering the site, but the design of sediment traps limits the potential for sediment to be resuspended in the water column once deposited. Therefore, the amount of sediment collected in the sediment trap will be useful for characterizing incoming sediment particles but is not useful for estimating contaminant loading.
22. Tables 2a and 2b, page 3 of 8 and 3 of 7, respectively: PCB46 MDL is greater than the PQL. This appears to be an error. If it is not an error, a lower MDL should be achieved. If a lower MDL is not achievable the implications for measuring total PCBs and meeting program objectives must be discussed.
23. Table 5, page 1 of 2: Analysis for cPAHs must be included for the fish tissue matrix.
24. Table 5, page 1 of 2: Dissolved organic carbon (DOC) must be filtered before preservation. The field filtering prior to preservation must be indicated in Table 5 as a step for preservation for the DOC analyses.

To be Considered Comments

1. Section 3.3.2, page 12, paragraph 3: Relative percent difference should be discussed in the first paragraph of Section 3.3.2 as it is calculated for two results to compare precision such as matrix spike/matrix spike duplicate (MS/MSD) and laboratory control sample/laboratory control sample duplicate.

2. Section 3.3.2, paragraph 3: It is stated that field duplicates will assess measurement variability. The primary variabilities that a field duplicate measures are sample homogenization procedures and matrix heterogeneity. Laboratory duplicates provide measurement (by the laboratory) variability.
3. Section 3.3.3, including Tables 2a-e: Language should be clarified regarding whether all accuracy and precision values are for informational purposes only, and current lab limits will be used for data validation. Tables 2a-e should clarify which laboratory information specifically is presented for informational purposes only.

Suggested Clarifications: “If all accuracy and precision values listed in Tables 2a-e are presented for informational purposes only (and current lab limits should be used for data validation), then add this information to the last bullet in Section 3.3.3.

For the note at the bottom of each table, specify which laboratory information is presented for information. For example:

“Accuracy and precision values, as well as MDLs, were provided by the laboratory. These values are presented for informational purposes only. Data review/validation will be based on the most current laboratory control limits in effect at the time of analysis.”

4. Appendix A, Laboratory Document References, page 2 of 2: The method reference SM 2340B must be added to the method reference column for the hardness determination.
5. Section 4.1.1, paragraph 2: This section states that the survey will have up to 100% coverage of the riverbed. The minimum expectation or goal for the percentage of the riverbed surveyed should be stated.
6. Section 4.1.4, page 19, paragraph 1: It is stated that two sediment traps will be deployed at river mile (RM) 16.2, whereas the FSP for surface water and sediment trap sampling says they will be deployed at RM 16.5. The correct location should be the same in both documents.
7. Section 4.2, all media: The proposed labels would specifically identify field duplicate field samples by using the same basic sample ID, with an additional “D” added. The surface sediment FSP states that duplicates would be “blind duplicates,” which usually means the sample labels do not alert the labs that this is a duplicate and do not let them know the samples it is paired with, as the QAPP labeling scheme would do. However, the FSP does not indicate an alternative duplicate labeling scheme that would actually create a blind duplicate. If field duplicates need to be “blind” duplicates, the naming scheme should be changed for field duplicates.
8. Section 4.2.1.1, page 20, paragraph 3: The sample identification rules for sample labels do not match that in the DQMP. The DQMP states that the first segment of sample IDs will be “PDI” and the second segment will be the alphanumeric designations, generally predicated upon the river area grid cells developed for the study. The QAPP states that the first segment will be “PDI” and the second segment will be the sample matrix. These discrepancies in sample identification rules between the DQMP and QAPP should be resolved.
9. Section 4.2.1.1, page 21, bullet item 4: An example is provided for naming of an MSD sample. It is not clear if the naming procedures described in the QAPP would result in a separate sample identification (ID) for additional mass for a sample for MS/MSD analyses. A sample for MS/MSD should be indicated on the chain of custody, and there should be a single ID for the entire sample. If the additional mass receives a different ID than the normal sample mass, it becomes a separate sample for the laboratory, which should not occur as the MS/MSD is for laboratory quality control.
10. Section 4.2.1.3, page 21, paragraph 5: Surface Water Sample IDs. It does not appear that the coding of the specific water fractions is discussed in the DQMP, as is referred to in this section of the QAPP. A search of the DQMP for PR2900 yielded no results. Similarly, “XAD” was not found in the DQMP in the appropriate context.
11. Section 4.3.1, page 24, paragraph 4: It is stated that analytical holding times vary, depending on the media and analytical method. It would be appropriate to include the analyte in this statement.
12. Section 4.3.4, page 26, paragraph 3: It is recommended that two custody seals, one on each of two adjacent sides be affixed over the cooler lid opening, rather than just one for sample shipment.
13. Section 4.6.1, page 29, paragraph 2: The description of equipment blanks should include text describing that data generated from equipment blanks will also be used to help determine if decontamination procedures are effective at removing contaminated material from non-dedicated sampling equipment. Additionally, this section should be revised to clarify that equipment blanks will be collected from disposable field equipment or supplies used for high volume sampling.
14. Section 5.1.1.1, page 23, paragraph 3: The field QA does not appear to include regular (which may be daily, depending on the study) review and verification of the field records for accuracy and completeness, e.g., independent verification that sample container ID’s match the collection records and also match the COC forms.
15. Section 6.3, page 40, paragraph 1: The level of validation should be clarified. Suggested clarification: Replace “A Stage 4 Validation” with “A full validation Stage 4 or EPA Stage 3, depending on the method. (There are two instances.) Suggest replacing “Stage 2A” with “EPA Stage 2A”.

The hierarchy for validation guidance documents should be clarified (i.e. EPA National Functional Guidelines (NFGs) should be used first and then Region 10 guidelines if a validation element is not covered in NFGs and is available).

16. Section 6.5 A clarification is suggested: replace “a Level 2 Data Package and a Level 4 Data Package” with an EPA Level 2 Data Package and an EPA level 4 Data Package”.
17. Table 2c, page 1 of 12. The correct method reference for the total dissolved solids analysis is 2540C.
18. Table 2e, page Two footnotes at the bottom of the table are both numbered “3” The first of these footnotes should be numbered “2”.
19. Table 3, Surface Sediment Sampling and Surface Water Sampling: Section 3.2.2 of the PDI Work Plan describes that surface sediment sampling results will be used to baseline the river bed to establish current conditions and SWACs. The DQOs in Section 3.2 of the QAPP should be revised to match data use objectives described in the PDI Work Plan, or just refer to the PDI Work Plan. Similarly, Table 3 of the QAPP should be revised to describe that surface water data will be used to establish baseline surface water conditions, for consistency with the description in Section 3.2.2 of the QAPP.
20. Table 5: There are inconsistencies regarding stated preservation temperatures, TDS method number, and other minor issues:
 - a) EPA method 1699, which covers chlorinated pesticides for sediment, should be collected in amber glass jars and the QAPP currently does not specify amber for this method.
 - b) Method 1613B (for dioxins/furans – sediments and particulate fraction for high-volume surface water samples) states that solid samples are to be frozen upon receipt at the laboratory and maintained in the dark at < -10 ° C until preparation.
 - c) No method is listed for lipid determination for fish tissue samples. Lipids determination is performed as part of the extraction process. The Laboratory SOP that is used for the extraction of fish tissue should be listed here.
 - d) For the metals in surface waters, method 6020A is listed as an analysis method for metals for the surface water in table 5, while method 6020B is listed in table 2c for the surface water.
 - e) The correct method for total dissolved solids is SM2540C. See method reference also on Table 7.
21. Table 6, first row for sediments: Hexachlorobenzene is not spelled correctly.
22. Table 7: Surrogates are not used for total organic carbon or DOC analyses. The surrogate recovery field for DOC should be not applicable (NA).
23. Figure 2: Figure 2 is not labeled “Figure 2” and the figure should list the “Pre-RD AOC Group” members in the box.

Matters of Style Comments

1. Crosswalk Table, page vi: Per the Unified Federal Program #22, Field Equipment, Section 4.7, is listed in the AECOM/Geosyntec QAPP column. However, Section 4.7 appears to discuss laboratory equipment rather than field equipment.
2. Section 4.1.5, page 19, paragraph 2: The first sentence does not read correctly. It appears to be missing a word. The sentence should be corrected.
3. Section 4.3.1, page 24, paragraph 4: The last statement reads, “The sample container, volume, preservation, and holding times ...”. To be consistent, sample container should be plural.
4. Section 6.3.1, page 40, paragraph 3: Data Validation and Usability Determination. Last sentence of first paragraph states, “Where summing of analytical results is required (e.g., total PAHs), the process in Appendix A of the RI/FS report should be followed.” The verb “should” in this sentence should be changed to “will.”

5. Table 2a: Dioxins/Furans and Grain Size analyses are listed twice, once on page 1 of 8 and then repeated on page 7 of 8. The second listing should be removed from the table.
6. Table 2a: The acronym “ $\mu\text{g/g}$ ” is not defined in the abbreviations at the end of the table.
7. Table 2b: The acronym “CA” is not defined in the acronyms at the end of the table.
8. Appendix A, Laboratory Document References, page 1 of 2: The complete citation for the tributyltin method must be completed.

References:

AECOM/Geosyntec. 2018. Portland Harbor Pre-Remedial Design Investigation and Baseline Studies Portland Harbor Superfund Site. January 17.

Geosyntec. 2017. Work Plan Portland Harbor Pre-Remedial Design Investigation Studies Portland Harbor Superfund Site. December 14.